



THIS FORM IS BASED ON PTO/SB/30 (09-00)

RCE/1700  
RECEIVED  
JUN 16 2003  
TC 1700**REQUEST  
FOR  
CONTINUED EXAMINATION (RCE)  
TRANSMITTAL**

Subsection (b) of 35 U.S.C. § 132, effective on May 29, 2000, provides for continued examination of an utility or plant application filed on or after June 8, 1995.

See The American Inventors Protection Act of 1999 (AIPA).

Application Number	09/866,021
Filing Date	May 23, 2001
First Named Inventor	Boris Yakobson
Group Art Unit	1754
Examiner Name	Peter J. Lish
Attorney Docket Number	5051-416DV

This is a Request for Continued Examination (RCE) under 37 C.F.R. § 1.114 of the above-identified application.

**NOTE:** 37 C.F.R. § 1.114 is effective on May 29, 2000. If the above-identified application was filed prior to May 29, 2000, applicant may wish to consider filing a continued prosecution application (CPA) under 37 C.F.R. § 13.53(d) (PTO/SB/29) instead of an RCE to be eligible for the patent term adjustment provisions of the AIPA. See Changes to Application Examination and Provisional Application Practice, Final Rule, 65 Fed. Reg. 50092 (Aug. 16, 2000); Interim Rule, 65 Fed. Reg. 14865 (Mar. 20, 2000), 1233 Off. Gaz. Pat. Office 47 (Apr. 11, 2000), which was established RCE practice.

**1. Submission required under 37 C.F.R. § 1.114**

- a. ☒ Previously submitted
- i. ☒ Consider the amendment(s)/reply under 37 C.F.R. § 1.116 previously filed on May 7, 2003  
(Any unentered amendment(s) referred to above will be entered).
- ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on \_\_\_\_\_
- iii. ☐ Other \_\_\_\_\_
- b. ☒ Enclosed
- i. ☐ Amendment/Reply
- ii. ☐ Affidavit(s)/Declaration(s)
- iii. ☐ Information Disclosure Statement (IDS)
- iv. ☒ Other Communication Accompanying Request for Continued Examination

**2. Miscellaneous**

- a. ☐ Suspension of action on the above-identified application is requested under 37 C.F.R. § 1.103(c) for a period of \_\_\_\_\_ months. (Period of suspension shall not exceed 3 months; Fee under 37 C.F.R. § 1.17(i) required)
- b. ☐ Other \_\_\_\_\_

**3. Fees**

The RCE fee under 37 C.F.R. § 1.17(e) is required by 37 C.F.R. § 1.114 when the RCE is filed.

- a. ☐ The Director is hereby authorized to charge the following fees, or credit any overpayments, to Deposit Account No. \_\_\_\_\_
- i. ☐ RCE fee required under 37 C.F.R. § 1.17(e) 06/13/2003 MAHRED1 00000091 09866021
- ii. ☐ Extension of time fee (37 C.F.R. § 1.136 and 1.17) 01 FC:2801 375.00
- iii. ☐ Other \_\_\_\_\_
- b. ☒ Check in the amount of \$ 375.00 enclosed
- c. ☐ Payment by credit card (Form PTO-2038 enclosed)
- d. ☒ If necessary, the Director is hereby authorized to charge any deficiencies, or credit any overpayments, to Deposit Account No. 50-0220

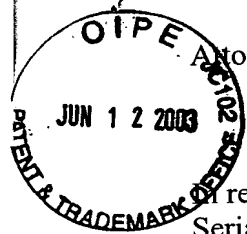
**SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT REQUIRED**

Name (Print/Type)	Laura M. Kelley	Registration No. (Attorney/Agent)	48,441
Signature		Date	June 9, 2003

**CERTIFICATE OF MAILING OR TRANSMISSION**

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop RCE, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on June 9, 2003:

Name (Print/Type)	Carey Gregory	Date	June 9, 2003
Signature			



Attorney's Docket No. 5051-416DV

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Re: Yakobson  
Serial No.: 09/866,021  
Filed: May 23, 2001  
For: *Physical Property Modification of Nanotubes*

Group Art Unit: 1754  
Confirmation No.: 6193  
Examiner: Peter J. Lish

June 9, 2003

Mail Stop RCE  
Commissioner for Patents  
PO Box 1450  
Alexandria, VA 22313-1450

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**COMMUNICATION ACCOMPANYING REQUEST FOR CONTINUED  
EXAMINATION**

Dear Sir:

This Communication is submitted in response to the Advisory Action dated 20 May 2003 ("the Action") and accompanies a Request for Continued Examination (RCE). Entry of the After Final Amendment and considerations of the Remarks contained therein is requested by the RCE transmittal sheet.

The Action maintains the rejection of Claims 24-25 and 28-32 as being anticipated by Charlier et al., *Structural and electronic properties of pentagon-heptagon pair defects in carbon nanotubes*, Phys. Rev. B, Vol. 53, No. 16 (hereinafter "Charlier"), and in the alternative, rejects Claims 29-30 as being obvious over Charlier. The rejections of Claims 24-25 and 28-32 are respectfully traversed.

Applicant claims a specific nanotube configuration, for example, in Claim 24:

a dipole of pentagon-heptagon and heptagon-pentagon dislocation cores located in an opposed spaced-apart relationship along a spiral propagation path along a longitudinal axis of said carbon nanotube;

a first region comprising a domain of modified lattice structure positioned between said dipole and formed by said dipole propagating throughout the nanotube as a result of stress being applied to said nanotube;

The Action states that "an argument of hindsight reasoning does not overcome a rejection based on the inherency of a property to a structure" and "it would have been obvious to one of ordinary skill at the time of invention that the modified structure propagates

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between the defects, as the defects are the cause of the modified lattice structure." Page 2 of the Action, lines 18-22 (emphasis added).

To clarify Applicants understanding of Charlier, Charlier proposes theoretical calculations of hypothetical nanotube formations. See Abstract ("General features of the energetics and electronic states of carbon nanotubes, containing pentagon-heptagon (5/7) topological defects in the hexagonal network of the zigzag configuration, are investigated with simple tight-binding models." (emphasis added)) Charlier contains no discussion of how to make or isolate such formations and merely proposes that the presence of "5/7 defects" may be naturally occurring in nanotube structures in random configurations.

It has been long established that in order for a reference to anticipate an invention, the reference must contain an "enabling disclosure." According to M.P.E.P. § 2121.01 (emphasis added):

A reference contains an "enabling disclosure" if the public was in possession of the claimed invention before the date of invention. "Such possession is effected if one of ordinary skill in the art could have combined the publication's description of the invention with his [or her] own knowledge to make the claimed invention." *In re Donohue*, 766 F.2d 531, 226 U.S.P.Q. 619 (Fed. Cir. 1985).

For example, where a process for making the compound is not developed until after the date of invention, the mere naming of a compound in a reference, without more, cannot constitute a description of the compound. See M.P.E.P. § 2121.02.

The U.S. Court of Customs and Patent Appeals held in In re Seaborg, 51 C.C.P.A. 1109, 328 F.2d 996, that the element Americium was patentable over a prior device that only produced trace amounts of the element. In holding that the prior device did not anticipate the element Americium, the Court favorably cited Judge Lerner Hand in Dewey & Almy Chemical Co. v. Mimex Co., 124 F.2d 986, 989 (2d Cir. 1942):

No doctrine of patent law is better established than that a prior patent or other publication to be an anticipation must bear within its four corners adequate directions for the practice of the patent invalidated. If the earlier disclosure offers no more than a starting point for further experiments, if its teaching will sometimes succeed and sometimes fail, if it does not inform the art without more how to practice the new invention, it has not correspondingly enriched the store of common knowledge, and it is not anticipation.

Charlier merely discusses calculations on various configurations that Charlier proposes may be naturally occurring, as demonstrated by Charlier's numerous discussions of computer models. See, e.g., Abstract ("features...are investigated within simple tight-binding models"); Page 109, col. 1, paragraph 4 ("The different atomic structions of the joint connected the two nanotubes...are relaxed on the computer using tight-binding molecular dynamics..."); Page 110, col. 2, paragraph 1, ("The electronic properties...are explored by application of the recursion method..."); Page 110, col. 2, paragraph 2, ("the calculation is performed on the joint without any periodic boundary condition along the direction parallel to the axis of the nanotube"); Page 113, col. 2, paragraph 2, ("The authors would like to thank Dr. S. Goedecker for the availability of the tight-binding molecular-dynamics code...")

Moreover, Charlier explicitly states that the existence of the nanotube configurations proposed for the calculations may not exist. Charlier notes as follows on page 113, col. 1, paragraph 2:

In essentially all the configurations investigated in the present study, the density of states reveals resonant states, associated with different peculiar sites in the five- and seven-membered rings. The observation of resonant states (sharp peaks) in the density of states of nanotube bundles, close to the Fermi level, would be proof of their [the particular nanotube configurations] exisistence.

Charlier further discusses that the presence of any 5/7 pair defects is hard to detect experimentally. See Page 108, col. 1, paragraph 2. Such defects "normally go undetected because they cancel each other out when randomly aligned." *Id.*

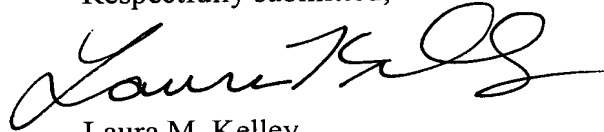
Accordingly, Charlier is not an enabling disclosure and does not teach or suggest the claimed invention.

### **Conclusion**

Applicant respectfully submits that, for the reasons discussed above, the present case is in form for allowance. Accordingly, Applicant requests allowance of all the pending claims and passage of this application to issue.

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Filed: May 23, 2001  
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Respectfully submitted,

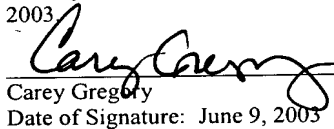


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Carey Gregory  
Date of Signature: June 9, 2003